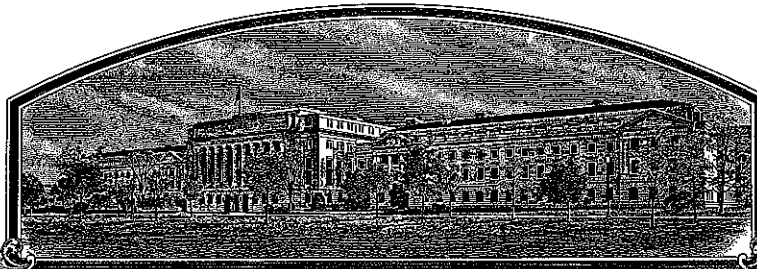


No.

200600070



# THE UNITED STATES OF AMERICA

**TO ALL TO WHOM THESE PRESENTS SHALL COME:**  
North Carolina State University and U.S. Government as  
represented by the Secretary of Agriculture

Whereas, THERE HAS BEEN PRESENTED TO THE

Secretary of Agriculture

AN APPLICATION REQUESTING A CERTIFICATE OF PROTECTION FOR AN ALLEGED DISTINCT VARIETY OF SEXUALLY REPRODUCED, OR TUBER PROPAGATED PLANT, THE NAME AND DESCRIPTION OF WHICH ARE CONTAINED IN THE APPLICATION AND EXHIBITS, A COPY OF WHICH IS HEREUNTO ANNEXED AND MADE A PART HEREOF, AND THE VARIOUS REQUIREMENTS OF LAW IN SUCH CASES MADE AND PROVIDED HAVE BEEN COMPLIED WITH, AND THE TITLE THERETO IS, FROM THE RECORDS OF THE PLANT VARIETY PROTECTION OFFICE, IN THE APPLICANT(S) INDICATED IN THE SAID COPY, AND WHEREAS, UPON DUE EXAMINATION MADE, THE SAID APPLICANT(S) IS (ARE) ADJUDGED TO BE ENTITLED TO A CERTIFICATE OF PLANT VARIETY PROTECTION UNDER THE LAW.

NOW, THEREFORE, THIS CERTIFICATE OF PLANT VARIETY PROTECTION IS TO GRANT UNTO THE SAID APPLICANT(S) AND THE SUCCESSORS, HEIRS OR ASSIGNS OF THE SAID APPLICANT(S) FOR THE TERM OF TWENTY YEARS FROM THE DATE OF THIS GRANT, SUBJECT TO THE PAYMENT OF THE REQUIRED FEES AND PERIODIC REPLENISHMENT OF VIABLE BASIC SEED OF THE VARIETY IN A PUBLIC REPOSITORY AS PROVIDED BY LAW, THE RIGHT TO EXCLUDE OTHERS FROM SELLING THE VARIETY, OR OFFERING IT FOR SALE, OR REPRODUCING IT, OR EXPORTING IT, OR CONDITIONING IT FOR PROPAGATION, OR STOCKING IT FOR ANY OF THE FOREGOING PURPOSES, OR USING IT IN PRODUCING A HYBRID OR DIFFERENT VARIETY THEREFROM, TO THE EXTENT PROVIDED BY THE PLANT VARIETY PROTECTION ACT. IN THE UNITED STATES SEED OF THIS VARIETY (1) SHALL BE SOLD BY VARIETY NAME ONLY AS A CLASS OF CERTIFIED SEED AND (2) SHALL CONFORM TO THE NUMERICAL GENERATIONS SPECIFIED BY THE OWNER OF THE RIGHTS. (84 STAT. 1542, AS AMENDED, 7 U.S.C. 2321 ET SEQ.)

PEANUT

'Phillips'

In Testimony Whereof, I have hereunto set my hand  
and caused the seal of the Plant Variety  
Protection Office to be affixed at the City of  
Washington, D.C. this eleven day of December,  
in the year two thousand and six.

Attest:

Commissioner  
Plant Variety Protection Office  
Agricultural Marketing Service

Secretary of Agriculture

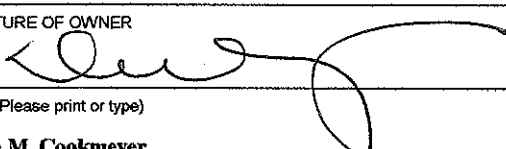
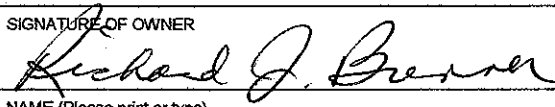


U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE  
SCIENCE AND TECHNOLOGY - PLANT VARIETY PROTECTION OFFICE

APPLICATION FOR PLANT VARIETY PROTECTION CERTIFICATE  
(Instructions and information collection burden statement on reverse)

The following statements are made in accordance with the Privacy Act of 1974 (5 U.S.C. 552a) and the Paperwork Reduction Act (PRA) of 1995.

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). Information is held confidential until certificate is issued (7 U.S.C. 2426).

1. NAME OF OWNER(S) <b>North Carolina State University and</b>		2. TEMPORARY DESIGNATION OR EXPERIMENTAL NAME <b>N98003</b>	3. VARIETY NAME <b>Phillips</b>
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP Code, and Country) <b>NCSU, Office of Technology Transfer, Campus Box 8210, Raleigh, NC 27695-8210, USA</b>		5. TELEPHONE (include area code) <b>(919) 515-7199</b>	FOR OFFICIAL USE ONLY PVPO NUMBER <b>200600070</b>
		6. FAX (include area code) <b>(919) 515-3773</b>	
7. IF THE OWNER NAMED IS NOT A "PERSON", GIVE FORM OF ORGANIZATION (corporation, partnership, association, etc.) <b>State and Federal Government Institutions</b>	8. IF INCORPORATED, GIVE STATE OF INCORPORATION	9. DATE OF INCORPORATION	FILING DATE <b>January 23, 2006</b>
10. NAME AND ADDRESS OF OWNER REPRESENTATIVE(S) TO SERVE IN THIS APPLICATION. (First person listed will receive all papers)			FILING AND EXAMINATION FEES: \$ <b>3864</b> - 2/14/06 DATE <b>5/8</b> - 1/23/06 CERTIFICATION FEE: \$ <b>768.00</b> DATE <b>8/21/06</b>
<b>Roger Crickenberger, Ph.D.</b> Associate Director North Carolina Agricultural Research Service North Carolina State University Campus Box 7643 Raleigh, NC 27695-7643  <b>Daryl Bowman</b> North Carolina Foundation Seed Producers, Inc. 8220 Riley Hill Rd. Zebulon, NC 27597		<b>Richard J. Brenner</b> Assistant Administrator USDA-ARS-OTT, 5601 Sunnyside Ave., Rm. 4-1159 Beltsville, MD 20705	
11. TELEPHONE (include area code) <b>(919) 515-2717</b>	12. FAX (include area code) <b>(919) 515-7745</b>	13. E-MAIL <b>roger_crickenberger@ncsu.edu</b>	
14. CROP KIND (Common Name) <b>Peanut</b>	16. FAMILY NAME (Botanical) <b>Fabaceae</b>	18. DOES THE VARIETY CONTAIN ANY TRANSGENES? (OPTIONAL) <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF SO, PLEASE GIVE THE ASSIGNED USDA-APHIS REFERENCE NUMBER FOR THE APPROVED PETITION TO DEREGULATE THE GENETICALLY MODIFIED PLANT FOR COMMERCIALIZATION.	
15. GENUS AND SPECIES NAME OF CROP <b>Arachis hypogaea</b>	17. IS THE VARIETY A FIRST GENERATION HYBRID? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO	20. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE SOLD AS A CLASS OF CERTIFIED SEED? (See Section 83(e) of the Plant Variety Protection Act) <input checked="" type="checkbox"/> YES (If "yes", answer items 21 and 22 below) <input type="checkbox"/> NO (If "no", go to item 23)	
19. CHECK APPROPRIATE BOX FOR EACH ATTACHMENT SUBMITTED (Follow instructions on reverse)		21. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF CLASSES? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, WHICH CLASSES? <input checked="" type="checkbox"/> FOUNDATION <input checked="" type="checkbox"/> REGISTERED <input checked="" type="checkbox"/> CERTIFIED	
a. <input checked="" type="checkbox"/> Exhibit A. Origin and Breeding History of the Variety b. <input checked="" type="checkbox"/> Exhibit B. Statement of Distinctness c. <input checked="" type="checkbox"/> Exhibit C. Objective Description of Variety d. <input checked="" type="checkbox"/> Exhibit D. Additional Description of the Variety (Optional) e. <input checked="" type="checkbox"/> Exhibit E. Statement of the Basis of the Owner's Ownership f. <input checked="" type="checkbox"/> Voucher Sample (2,500 viable untreated seeds or, for tuber propagated varieties, verification that tissue culture will be deposited and maintained in an approved public repository) g. <input checked="" type="checkbox"/> Filing and Examination Fee (\$3,652), made payable to "Treasurer of the United States" (Mail to the Plant Variety Protection Office)		22. DOES THE OWNER SPECIFY THAT SEED OF THIS VARIETY BE LIMITED AS TO NUMBER OF GENERATIONS? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, SPECIFY THE NUMBER 1,2,3, etc. FOR EACH CLASS. <input checked="" type="checkbox"/> FOUNDATION <input checked="" type="checkbox"/> REGISTERED <input checked="" type="checkbox"/> CERTIFIED (If additional explanation is necessary, please use the space indicated on the reverse.)	
23. HAS THE VARIETY (INCLUDING ANY HARVESTED MATERIAL) OR A HYBRID PRODUCED FROM THIS VARIETY BEEN SOLD, DISPOSED OF, TRANSFERRED, OR USED IN THE U. S. OR OTHER COUNTRIES? <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO IF YES, YOU MUST PROVIDE THE DATE OF FIRST SALE, DISPOSITION, TRANSFER, OR USE FOR EACH COUNTRY AND THE CIRCUMSTANCES. (Please use space indicated on reverse.)		24. IS THE VARIETY OR ANY COMPONENT OF THE VARIETY PROTECTED BY INTELLECTUAL PROPERTY RIGHT (PLANT BREEDER'S RIGHT OR PATENT)? <input type="checkbox"/> YES <input checked="" type="checkbox"/> NO IF YES, PLEASE GIVE COUNTRY, DATE OF FILING OR ISSUANCE AND ASSIGNED REFERENCE NUMBER. (Please use space indicated on reverse.)	
25. The owners declare that a viable sample of basic seed of the variety has been furnished with application and will be replenished upon request in accordance with such regulations as may be applicable, or for a tuber propagated variety a tissue culture will be deposited in a public repository and maintained for the duration of the certificate. The undersigned owner(s) is(are) the owner of this sexually reproduced or tuber propagated plant variety, and believe(s) that the variety is new, distinct, uniform, and stable as required in Section 42, and is entitled to protection under the provisions of Section 42 of the Plant Variety Protection Act. Owner(s) is (are) informed that false representation herein can jeopardize protection and result in penalties.			
SIGNATURE OF OWNER 		SIGNATURE OF OWNER 	
NAME (Please print or type) <b>Donna M. Cookmeyer</b>		NAME (Please print or type) <b>Richard J. Brenner</b>	
CAPACITY OR TITLE <b>Director</b> <b>Office of Technology Transfer</b> <b>North Carolina State University</b>	DATE <b>1/9/06</b>	CAPACITY OR TITLE <b>Assistant Administrator</b>	DATE <b>1/19/06</b>

## INSTRUCTIONS

**GENERAL:** To be effectively filed with the Plant Variety Protection Office (PVPO), **ALL** of the following items must be received in the PVPO: (1) Completed application form signed by the owner; (2) completed exhibits A, B, C, E; (3) for a seed reproduced variety at least 2,500 viable untreated seeds, for a hybrid variety at least 2,500 untreated seeds of each line necessary to reproduce the variety, or for tuber reproduced varieties verification that a viable (*in the sense that it will reproduce an entire plant*) tissue culture will be deposited and maintained in an approved public repository; (4) check drawn on a U.S. bank for \$3,652 (\$432 filing fee and \$3,220 examination fee), payable to "Treasurer of the United States" (See Section 97.6 of the Regulations and Rules of Practice.) Partial applications will be held in the PVPO for not more than 90 days, then returned to the applicant as unfilled. Mail application and other requirements to Plant Variety Protection Office, AMS, USDA, Room 401, NAL Building, 10301 Baltimore Avenue, Beltsville, MD 20705-2351. **Retain one copy for your files.** All items on the face of the application are self explanatory unless noted below. Corrections on the application form and exhibits must be initialed and dated. **DO NOT** use masking materials to make corrections. If a certificate is allowed, you will be requested to send a check payable to "Treasurer of the United States" in the amount of \$432 for issuance of the certificate. Certificates will be issued to owner, not licensee or agent.

## Plant Variety Protection Office

Telephone: (301) 504-5518

FAX: (301) 504-5291

Homepage: <http://www.ams.usda.gov/science/pvpo/pvpindex.htm>

To avoid conflict with other variety names in use, the applicant must check the appropriate recognized authority and provide evidence that name has been cleared by the appropriate recognized authority before the Certificate of Protection is issued. For example, for agricultural and vegetable crops, contact: Seed Branch, AMS, USDA, 10301 Baltimore Avenue, Suite 401 NAL Building, Beltsville, MD 20705. Telephone: (301) 504-5682 <http://www.ams.usda.gov/tsg/seed.htm>.

## ITEM

- 19a. Give: (1) the genealogy, including public and commercial varieties, lines, or clones used, and the breeding method; (2) the details of subsequent stages of selection and multiplication; (3) evidence of uniformity and stability; and (4) the type and frequency of variants during reproduction and multiplication and state how these variants may be identified
- 19b. Give a summary of the variety's distinctness. Clearly state how this application variety may be distinguished from all other varieties in the same crop. If the new variety is most similar to one variety or a group of related varieties:
- (1) identify these varieties and state all differences objectively;
  - (2) attach statistical data for characters expressed numerically and demonstrate that these are clear differences; and
  - (3) submit, if helpful, seed and plant specimens or photographs (prints) of seed and plant comparisons which clearly indicate distinctness.
- 19c. Exhibit C forms are available from the PVPO Office for most crops; specify crop kind. Fill in Exhibit C (Objective Description of Variety) form as completely as possible to describe your variety.
- 19d. Optional additional characteristics and/or photographs. Describe any additional characteristics that cannot be accurately conveyed in Exhibit C. Use comparative varieties as is necessary to reveal more accurately the characteristics that are difficult to describe, such as plant habit, plant color, disease resistance, etc.
- 19e. Section 52(5) of the Act requires applicants to furnish a statement of the basis of the applicant's ownership. An Exhibit E form is available from the PVPO.
20. If "Yes" is specified (seed of this variety be sold by variety name only, as a class of certified seed), the applicant MAY NOT reverse this affirmative decision after the variety has been sold and so labeled, the decision published, or the certificate issued. However, if "No" has been specified, the applicant may change the choice. (See Regulations and Rules of Practice, Section 97.103).
23. See Sections 41, 42, and 43 of the Act and Section 97.5 of the regulations for eligibility requirements.
24. See Section 55 of the Act for instructions on claiming the benefit of an earlier filing date.

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**22. CONTINUED FROM FRONT** (Please provide a statement as to the limitation and sequence of generations that may be certified.)

Seed of Phillips peanut shall be limited to the Foundation, Registered, and Certified generations.

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**23. CONTINUED FROM FRONT** (Please provide the date of first sale, disposition, transfer, or use for each country and the circumstances, if the variety (including any harvested material) or a hybrid produced from this variety has been sold, disposed of, transferred, or used in the U.S. or other countries.)

Foundation seed of Phillips was first sold on March 31, 2005.

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**24. CONTINUED FROM FRONT** (Please give the country, date of filing or issuance, and assigned reference number, if the variety or any component of the variety is protected by intellectual property right (Plant Breeder's Right or Patent).)

**NOTES:** It is the responsibility of the applicant/owner to keep the PVPO informed of any changes of address or change of ownership or assignment or owner's representative during the life of the application/certificate. The fees for filing a change of address; owner's representative; ownership or assignment; or any modification of owner's name is specified in Section 97.175 of the regulations. (See Section 101 of the Act, and Sections 97.130, 97.131, 97.175(h) of the Regulations and Rules of Practice.)

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 1.4 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, gender, religion, age, disability, sexual orientation, marital or family status, political beliefs, parental status, or protected genetic information. (Not all prohibited bases apply to all programs.) Persons with disabilities who require alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at 202-720-2600 (voice and TDD).

To file a complaint of discrimination, write USDA, Director, Office of Civil Rights, Room 328-W, Whitten Building, 14th and Independence Avenue, SW, Washington, DC 20250-9410 or call 202-720-5964 (voice and TDD). USDA is an equal opportunity provider and employer.

**Exhibit A**  
**Origin and Breeding History of the Variety**

'Phillips', tested under the experimental designation N98003, is an  $F_6$ -derived line selected from cross X92165 made in 1989 between two early maturing NCSU breeding lines, N90014E (used as the female) and N91024 (used as the male). Both parents were  $F_5$ -derived selections from a cross between 'NC 7' (Wynne *et al.*, 1979) and 'NC 9' (Wynne *et al.*, 1986). The breeding method used in development of Phillips was a combination of single-seed descent and pedigree selection.  $F_1$  plants of cross X92165 were grown at a winter nursery in Puerto Rico in the winter of 1992-93; single-seed descent was practiced in the  $F_2$  in North Carolina in the summer of 1993 and in the  $F_3$  at the 1993-1994 winter nursery in Puerto Rico; the  $F_{1:4}$  family was subjected to selection for pod size and shape in the field in North Carolina in 1994; as were  $F_{4:5}$  families in 1995 and  $F_{5:6}$  families 1996. Selection in the  $F_4$ ,  $F_5$ , and  $F_6$  generations was based on visual evaluation of pod size, shape, and brightness. Subsequent selection among  $F_6$ -derived families was based on yield, grade factors, and pod brightness and hue. Yield and grade data were collected on the  $F_{6:7}$  family 1997 Preliminary Yield Test (single-rep tests conducted at two sites) in 1997, and the  $F_{6:8}$  family was numbered in 1998 upon its entry into advanced yield trials. N98003 was entered in the NCSU Advanced Yield Test (two-rep tests conducted at three sites annually) from 1998 through 2003, the VPI-NCSU Peanut Variety and Quality Evaluation Program (conducted at four sites annually with separate two-rep tests dug early and late at each site) from 2000 through 2003, and the Uniform Peanut Performance Test (conducted at nine sites across seven states) in 2003. Phillips was developed by employees of NCSU (breeder Thomas G. Isleib; agricultural research specialists Philip W. Rice and Susan C. Copeland, research technicians Roy W. Mozingo II and John B. Graeber) and by employees of USDA-ARS (research chemist Harold E. Pattee and supervisory plant physiologist Timothy H. Sanders).

**Statement of Uniformity and Stability**

Phillips was observed over seven (7) generations and was found to be uniform and stable. No variants were observed in Phillips.

**References**

- Wynne, J.C., R.W. Mozingo, and D.A. Emery. 1979. Registration of NC 7 peanut (Reg. No. 22). *Crop Sci.* 19:563.
- Wynne, J.C., R.W. Mozingo, and D.A. Emery. 1986. Registration of 'NC 9' peanut. *Crop Sci.* 26:197.

**Exhibit B**  
**Statement of Distinctness**

The large-seeded virginia-type cultivar to which Phillips is most similar is NC-V 11. The simplest character that clearly distinguishes Phillips from NC-V 11 is seed coat color: Phillips has tan testa while NC-V 11 has pink testa. The two differ in several other quantitative characters of interest to producers and processors of large-seeded virginia-type peanuts, but these differences are statistically significant only when means are computed across several years and/or locations, not in each trial (see Tables 1-3 below).

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 1.4 hours per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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**U.S. DEPARTMENT OF AGRICULTURE Exhibit C  
AGRICULTURAL MARKETING SERVICE  
SCIENCE AND TECHNOLOGY  
PLANT VARIETY PROTECTION OFFICE  
BELTSVILLE, MD 20705**

**OBJECTIVE DESCRIPTION OF VARIETY  
Peanut (*Arachis hypogaea*)**

NAME OF APPLICANT (S) North Carolina State University  U.S. Government as represented by the Secretary of Agriculture	TEMPORARY OR EXPERIMENTAL DESIGNATION N98003	VARIETY NAME Phillips
ADDRESS (Street and No. or RD No., City, State, Zip Code, and Country) North Carolina Agricultural Research Service Campus Box 7643 North Carolina State University Raleigh, NC 27695-7643 USA		FOR OFFICIAL USE ONLY  PVPO NUMBER  <b>200600070</b>

**PLEASE READ ALL INSTRUCTIONS CAREFULLY:**

Place the appropriate number that describes the varietal character of this variety in the boxes below. Place a zero in the first box e.g.,  or  when a number is either 99 or less or 9 or less.

**1. BOTANICAL TYPE:**

<input type="text" value="1"/>	Flowering on the Main Stem:	1 = Absent	2 = Present
<input type="text" value="1"/>	Branching Pattern:	1 = Alternate - Pairs of vegetative and reproductive branches (Virginia) 2 = Sequential - Continuous reproductive branches (Valencia-Spanish) _____ 3 = Other (Specify) _____	

**2. PLANT:**

<input type="text" value="2"/>	Habit:	1 = Prostrate (Florunner)	2 = Decumbent (NC-5)	<input type="text" value="3"/>	Branching:	1 = Sparse (Valencia)	2 = Moderate (Starr)
		2 = Semi-Erect (Florispans)	4 = Erect (Starr)			3 = Profuse (Florunner)	

**3. MATURITY:**

<input type="text" value="1"/>	Region:	1 = Virginia, North Carolina	2 = Southeast United States	3 = Southwest United States	4 = Other
<input type="text" value="1"/> <input type="text" value="5"/> <input type="text" value="3"/>	Number of Days to Maturity				
<input type="text" value="0"/> <input type="text" value="3"/>	Number of Days Earlier Than	<input type="text" value="8"/>	1 = Starr	2 = Florunner	3 = Florigiant
	Number of Days Later Than	<input type="text" value="0"/> <input type="text" value="3"/>	4 = Virginia 61R	5 = NC-2	
			6 = NC-5	7 = Southeastern Runner 56-15	
			8 = Other (Specify) NC 7		

**4. LEAVES:**

<input type="text" value="2"/>	Color at 60 Days (Nickerson Color Designation _____)	1=Light Green (10gy 6/9)
<input type="text" value="5"/> <input type="text" value="9"/>	mm Leaflet length (Basal Leaflet of the Youngest Fully Opened Leaf)	2= Medium Green (2.5G 5/9)
<input type="text" value="2"/> <input type="text" value="4"/>	Leaflet Length/Width Ratio	3=Dark green (5G 4/7)
		4= Other (Specify)

**5. POD (Average for 20 pods at maturity):** mm Length mm Diameter KG./HA. Pod Yield % Less Than % More Than }  

1 = Starr 2 = Florunner 3 = Florigiant

4 = Virginia 61R 5 = NC-2

6 = NC-5 7 = Southeastern Runner 56-15

8 = Other (Specify) NC-V 11 % Fancy Size: (% riding 13.46 mm., 34/64 Inch, Spacing Set on Presizer Roller) Number of Seeds per Pod: 1 = 1 2 = 2 3 = 3 4 = 3-4 5 = 2-3-4 Constriction: 1 = Shallow or None (Virginia 56R, Argentine) 2 = Medium (Virginia 61R) 3 = Deep (Starr) Surface: 1 = Glabrous (Florunner) 2 = Pubescent (Florispán) Beak: 1 = Absent 2 = Inconspicuous 3 = Pronounced**6. SEED (Mature, cured but not aged):** Coat Color: 1 = White (Pearl) 2 = Cream 3 = Tan (Starr) 4 = Brown 5 = Pink (Florigiant)  
6 = Red 7 = Purple 8 = Dark Purple 9 = Variegated  
10 = Other (Specify) \_\_\_\_\_ Coat Surface: 1 = Smooth 2 = Undented  1 = Uniform Color 2 = Blemished Shape: 1 = Spheroidal (Starr) 2 = Short Broad (Florunner) 3 = Elongated-Slender (Dixie Runner)  
4 = Cylindrical-tapered Ends 5 = Cylindrical Blunt Ends (NC-2) 6 = Other (Specify) \_\_\_\_\_ mm Length  mm Width  Grams per 100 Seeds (8% Moisture)**7. DISEASE RESISTANCE: (0 = Not Tested, 1 = Susceptible, 2 = Moderately Susceptible, 3 = Moderately Resistant, 4 = Resistant)** Southern Stem Rot Rust Early Leaf Spot Virus X Southern Leaf Spot Mosaic Pod Rot Complex Other (Specify) CBR, Sclerotinia blight, TSWV**8. INSECT RESISTANCE: (0 = Not Tested, 1 = Susceptible, 2 = Moderately Susceptible, 3 = Moderately Resistant, 4 = Resistant)** Thrips Burrowing Bug Leaf Hopper Nematode (Specify species) \_\_\_\_\_ Southern Corn Rootworm Lesser Cornstalk Borer Aphid Other (Specify) \_\_\_\_\_**9. COMPARISON OF SUBMITTED VARIETY WITH ONE OR MORE SIMILAR VARIETIES:**

VARIETY	OIL* (% at 0% moisture)	PROTEIN* (%)	OLEIC: * LINOLEIC ACID RATIO	IODINE* NUMBER	SHELLING (%)	SMK** (%)	ELK+ (%)	MAIN STEM HEIGHT (CM)
Submitted	52.2	--	1.58	98.5	73.3	68.2	45.3	35.6
Similar	51.2	--	1.40	99.3	72.4	66.7	32.8	30.5
Name of Similar Variety	NC-V 11	--	NC-V 11	NC-V 11	NC-V 11	NC-V 11	NC-V 11	NC-V 11

\* From Sound Mature Kernels \*\* Sound Mature Kernels + Extra Large Kernels

**10. INDICATE A VARIETY WHICH MOST CLOSELY RESEMBLES THAT SUBMITTED:**

CHARACTER	VARIETY	CHARACTER	VARIETY
Pod Color	NC 10C	Hull Thickness	--
Seedling Vigor	--	Seed Size	NC 9
Seed Dormancy	--	Leaf Color	--

**11. COMMENTS: (Additional description or clarification -- such as: relative disease reactions may be compared with standard varieties)**

VARIETY	STEARIC ACID (%)	BEHENIC ACID (%)	LIGNOCERIC ACID (%)
Submitted	2.5	2.9	1.5
Similar	2.4	2.6	1.5
Name of Similar Variety	NC-V 11	NC-V 11	NC-V 11

## Exhibit D

### Optional Supporting Information

'Phillips' is a virginia-type peanut (*Arachis hypogaea* L.) line with a high yield of bright fancy pods. It has alternate branching pattern, intermediate runner growth habit, medium green foliage, large seeds with tan testa averaging 835 mg seed<sup>-1</sup>, approximately 34% jumbo pods and 45% fancy pods.

**Agronomic performance and grade.** Yield of Phillips is comparable to that of existing cultivars. In the NCSU Advanced Yield Tests (Table 1), yield and value per acre of Phillips were numerically less but not significantly different from Gregory, the best entry in the test. In comparison with NC-V 11 (Wynne *et al.*, 1991), and VA 98R (Mozingo *et al.*, 2000), the cultivars closest to Phillips in distribution of jumbo and fancy pods, Phillips was numerically but not significantly higher yielding than NC-V 11 (3739 vs. 3614 lb A<sup>-1</sup>, ns) and higher than VA 98R (3739 vs. 3164 lb A<sup>-1</sup>, P<0.05), with corresponding differences in value per acre at 2003 support price levels (690 vs. 649 \$ A<sup>-1</sup>, ns; and 690 vs. 567 \$ A<sup>-1</sup>, P<0.05, respectively). In the PVQE trials from 2000 through 2003 (Table 2), Phillips's yield per acre was not significantly greater than those of NC-V 11, Gregory, VA 98R, or Wilson (4617 vs. 4531, 4548, 4499, or 4694 lb A<sup>-1</sup>, respectively, all ns), but its value was (826 vs. 787, 792, 784, or 795 \$ A<sup>-1</sup>, all P<0.05). The difference between the results obtained by the NCSU breeding project and the PVQE program may reflect the use of irrigation at all NCDA research stations used as test locations by the NCSU project, the sparse seeding rate used in the NCSU trials, or the differential occurrence and severity of diseases at test sites.

In terms of grade, Phillips compares most directly with smaller-podded virginia-type cultivars NC-V 11, VA 98R, and Wilson. Jumbo pod content of Phillips was greater than that of all three comparable cultivars while its fancy pod content was similar. In the PVQE trials, jumbo pods of Phillips were brighter than those of NC-V 11 and VA 98R (46.8 vs. 45.3 or 45.5 Hunter L score, both P<0.05) but not different from jumbo pods of Wilson. Fancy pods of Phillips were brighter than those of NC-V 11 (46.0 vs. 45.3 Hunter L score, P<0.05) but not different from those of VA 98R and Wilson. Phillips had higher content of extra large kernels and sound mature kernels than any of the three comparable cultivars; consequently its price per pound was also higher.

From 1998 through 2003 the old industry standard cultivar Florigiant (1) was used as a check in the NCSU Advanced Yield Test, permitting a comparison between its pod characteristics and those of Phillips (Table 1). Phillips had significantly fewer jumbo pods than Florigiant (38 vs 45%, P<0.05) but the fancy pod contents of the two lines were not different. Jumbo pod brightness of the two lines did not differ, but fancy brightness scores for Phillips were higher than those for Florigiant (47.2 vs. 45.7 Hunter L score, P<0.05). In spite of having fewer jumbo pods than Florigiant, Phillips had significantly more extra large kernels (44 vs. 28%, P<0.05). It also had higher sound mature kernel and meat content than Florigiant (71 vs. 67%, P<0.05; and 73 vs. 70%, P<0.05).

**Disease reactions.** Phillips was selected from the conventional cultivar development stream in the NCSU peanut breeding project, *i.e.*, it was not developed specifically to carry any particular disease resistance. Testing of Phillips's reactions to diseases prevalent in the Virginia-Carolina production area began in 1999.

**Resistance to early leafspot.** Phillips's reaction to early leafspot was evaluated from 1999 through 2003 in five field trials at the Peanut Belt Research Station with no application of



leafspot fungicide during the entire season (Table 3). Defoliation was rated on a proportional scale of 1 (no defoliation) to 9 (complete defoliation) in late September or early October each year. Yield was measured on the unsprayed plots. Phillips was not significantly different in defoliation from the best two cultivars, NC 12C and Perry, or from Wilson (6.6 vs. 6.2, 6.3, and 6.7 respectively, all ns), but it had a lower score than VA 98R (6.6 vs. 7.5,  $P<0.05$ ). Yield of Phillips in the absence of chemical control was not significantly different from that of NC 12C, the best line (2608 vs. 3013 lb A<sup>-1</sup>, ns), nor was it significantly different from the worst line in the test.

**Resistance to *Cylindrocladium* black rot and *Sclerotinia* blight.** Although Phillips was entered in disease trials on infested soil from 1999 through 2003, the trials were so affected by tomato spotted wilt virus in 2000, 2001, and 2002 that useful data was acquired in only two tests for either soil-borne disease. Reactions to both diseases are expressed as the proportion of plants exhibiting symptoms in plots grown on infested soil (Table 3). CBR incidence in Phillips was less than that in VA 98R or Wilson (18 vs. 48 and 49%, respectively, both  $P<0.05$ ) and not significantly different from that in NC 10C, NC 12C, or Perry. Phillips is susceptible to *Sclerotinia* blight with more than 51% of plants exhibiting symptoms compared with 36% for Perry (ns) and 32% for VA 98R (ns), two cultivars with partial resistance.

**Field resistance to tomato spotted wilt virus.** Phillips's reaction to tomato spotted wilt virus was evaluated from 1999 through 2003 in field trials at the Peanut Belt Research Station in plots planted at 50 cm seed spacing (Table 3). The thin seeding rate and withholding of insecticide from the plots promoted feeding by thrips, the vector of TSWV. Disease reaction to TSWV was measured as the proportion of plants exhibiting foliar symptoms at any time during the season. TSWV incidence in Phillips was greater than but not significantly different from that in NC-V 11, either across all tests (38 vs. 30%, ns) or in 2000-2003 (60 vs. 50%, ns). TSWV incidence in Phillips was greater than that in Gregory (38 vs. 25%,  $P<0.05$  and 60 vs. 45%,  $P<0.05$ ).

**Blanching characteristics.** In the PVQE trials, blanching of extra large kernels of Phillips was slightly inferior to that of NC-V 11, VA 98R, and Wilson (Table 4). Phillips was similar to the three comparable cultivars in percentage of kernels split in blanching and in kernels partially blanched, but it had fewer whole blanched kernels than NC-V 11 and VA 98R (85.4 vs. 89.2 and 88.8%, respectively, both  $P<0.05$ ), and more kernels not blanched than any of the three (2.8 vs. 1.6, 1.4, and 1.3%, respectively, all  $P<0.05$ ). The behavior of medium kernels of Phillips under blanching was similar: it produced as many split kernels as NC-V 11, VA 98R, and Wilson, but it produced fewer whole blanched kernels (71.7 vs. 81.6, 82.3, and 77.7%, respectively, all  $P<0.05$ ), more medium kernels not blanched (11.1 vs. 4.9, 4.3, and 6.5%, respectively, all  $P<0.05$ ), and more partially blanched medium kernels than NC-V 11 and VA 98R (11.3 vs. 7.2 and 6.8%, respectively, both  $P<0.05$ ). However, blanching of Phillips was not different from that of NC 7 in most respects.

**Flavor characteristics.** Flavor of Phillips was evaluated by a trained sensory panel in the Department of Food Science at N.C. State University under the direction of Dr. Harold Pattee, USDA-ARS Market Quality and Handling Research Unit. Samples of sound mature kernels from three locations from the 2002 growing season were submitted for evaluation along with samples of check cultivars. The roasted peanut, sweet, and bitter attributes of flavor in Phillips were not significantly different from those in NC 7, the flavor standard for the virginia market-type (Table 6). Phillips had lower intensity of the roasted peanut attribute (3.35 vs. 4.19,

$P < 0.05$ ) compared with Gregory. Flavor was also evaluated as part of the cooperative Uniform Peanut Performance conducted at nine locations in 2003. Sensory analysis was performed on an ELK sample from each location by a sensory panel conducted by Timothy H. Sanders and Keith Hendrix of the USDA-ARS Market Quality and Handling Research Unit at Raleigh, NC. Again, flavor of Phillips did not differ from that of NC 7 for any sensory attribute measured, although it was lower in the intensity of the sweet attribute (2.08 vs. 2.29 flavor intensity units [fiu],  $P < 0.05$ ) and higher in bitter (3.06 vs. 2.91 fiu,  $P < 0.05$ ) compared with the runner-type flavor standard, Florunner.

**Oil chemistry and calcium content.** Phillips has normal oil chemistry. Compared with NC-V 11, it has lower palmitic acid content (9.7 vs. 10.4% of total fatty acids,  $P < 0.05$ ), higher oleic acid content (48.8 vs. 47.6%,  $P < 0.05$ ), lower linoleic acid content (32.0 vs. 33.1%,  $P < 0.05$ ), higher arachidic acid content (1.3 vs. 1.2%,  $P < 0.05$ ), higher eicosenoic acid content (1.3 vs. 1.2%,  $P < 0.05$ ), lower iodine value (98.5 vs. 99.3%,  $P < 0.05$ ), lower ratio of polyunsaturated to saturated fatty acids (1.79 vs. 1.85,  $P < 0.05$ ), and higher long-chain saturated fatty acids (5.7 vs. 5.3%,  $P < 0.05$ ). It was not significantly different from NC-V 11 for stearic, behenic, lignoceric, or total saturated fatty acid content, nor for oleic-to-linoleic acid ratio.

Phillips was developed by employees of NCSU (breeder Thomas G. Isleib; agricultural research specialists Philip W. Rice and Susan C. Copeland, research technicians Roy W. Mozingo II and John B. Graeber) and by employees of USDA-ARS (research chemist Harold E. Pattee and supervisory plant physiologist Timothy H. Sanders).

#### References

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ns, †, \*, \*\*, Denote traits with digging-by-entry interaction that were not significant or significant at the 10%, 5%, and 1% levels of probability, respectively, by F-test.

Table 3. Disease reactions of N98002, N98003, and N000900l compared with released cultivars.

Line	Early leafspot		CBR incidence	Sclerotinia incidence	TSWV incidence	
	Defoliation score	Yield without control			All years	2000-2003
N98002	6.60±0.27 <sup>de</sup>	2783±250 <sup>bc</sup>	0.1244±0.1014 <sup>bcd</sup>	0.5512±0.1185 <sup>a</sup>	0.3669±0.0455 <sup>bc</sup>	0.5870±0.0510 <sup>abcd</sup>
Phillips	6.62±0.27 <sup>cde</sup>	2608±250 <sup>bcd</sup>	0.1787±0.0694 <sup>bcd</sup>	0.5166±0.0941 <sup>a</sup>	0.3844±0.0457 <sup>abc</sup>	0.5965±0.0511 <sup>abcd</sup>
Brantley	6.61±0.34 <sup>cde</sup>	2384±319 <sup>bode</sup>	0.2858±0.1014 <sup>abc</sup>	0.3432±0.1629 <sup>ab</sup>	0.4167±0.0500 <sup>ab</sup>	0.6250±0.0510 <sup>ab</sup>
NC 7	6.86±0.14 <sup>cd</sup>	2149±132 <sup>de</sup>	0.3376±0.0262 <sup>a</sup>	0.5665±0.0511 <sup>a</sup>	0.3463±0.0272 <sup>bc</sup>	0.6119±0.0468 <sup>abc</sup>
NC 9	7.10±0.17 <sup>bcd</sup>	2219±163 <sup>cde</sup>	0.2598±0.0275 <sup>bc</sup>	0.4776±0.0687 <sup>a</sup>	0.4782±0.0260 <sup>a</sup>	0.6512±0.0379 <sup>a</sup>
NC 10C	7.08±0.17 <sup>bcd</sup>	1997±163 <sup>c</sup>	0.1941±0.0262 <sup>c</sup>	0.4103±0.0631 <sup>a</sup>	0.4077±0.0366 <sup>ab</sup>	0.6726±0.0565 <sup>a</sup>
NC-V 11	7.21±0.15 <sup>bc</sup>	2327±145 <sup>cde</sup>	0.2230±0.0308 <sup>bc</sup>	0.4657±0.0630 <sup>a</sup>	0.2968±0.0247 <sup>cd</sup>	0.5040±0.0327 <sup>cde</sup>
NC 12C	6.24±0.13 <sup>e</sup>	3013±117 <sup>b</sup>	0.1237±0.0275 <sup>cd</sup>	0.4985±0.0584 <sup>a</sup>	0.3725±0.0257 <sup>bc</sup>	0.6099±0.0403 <sup>abc</sup>
Gregory	6.83±0.14 <sup>cd</sup>	2677±140 <sup>bc</sup>	0.1730±0.0293 <sup>cd</sup>	0.4772±0.0542 <sup>a</sup>	0.2545±0.0221 <sup>d</sup>	0.4546±0.0282 <sup>e</sup>
Perry	6.33±0.19 <sup>e</sup>	2602±184 <sup>bcd</sup>	0.1100±0.0263 <sup>cd</sup>	0.3598±0.0509 <sup>a</sup>	0.3883±0.0244 <sup>b</sup>	0.6514±0.0314 <sup>a</sup>
VA-C 92R	7.60±0.14 <sup>a</sup>	2020±126 <sup>c</sup>	0.3051±0.0326 <sup>ab</sup>	0.3324±0.0689 <sup>ab</sup>	0.3146±0.0348 <sup>bcd</sup>	0.5125±0.0506 <sup>bode</sup>
VA 98R	7.49±0.18 <sup>ab</sup>	2103±174 <sup>de</sup>	0.4849±0.0563 <sup>a</sup>	0.3194±0.0789 <sup>ab</sup>	0.2839±0.0308 <sup>cd</sup>	0.4830±0.0358 <sup>de</sup>
Wilson	6.69±0.29 <sup>cde</sup>	2358±274 <sup>cde</sup>	0.4889±0.0936 <sup>a</sup>	0.6116±0.1540 <sup>a</sup>	0.2839±0.0493 <sup>bcd</sup>	0.4949±0.0507 <sup>bode</sup>
GP-NC 343	4.67±0.12 <sup>f</sup>	3412±114 <sup>a</sup>	---	---	---	---
N96076L	---	---	0.0262±0.0431 <sup>d</sup>	0.1341±0.0597 <sup>b</sup>	---	---
PI 576636	---	---	---	---	0.1065±0.0307 <sup>a</sup>	0.2275±0.0405 <sup>f</sup>

a,b,c,d,e,f Means within a column followed by the same letter are not significantly different ( $P<0.05$ ) by t-test.

Table 4. Blanching characteristics of extra large kernels.

Line	Moisture content before roasting	Moisture content after roasting	Blanching loss	Blanched			
				Splits	Whole kernels	Not blanched	Partially blanched
				%			
N98002	6.13±0.09 <sup>abc</sup>	4.16±0.11 <sup>abc</sup>	2.34±0.13 <sup>ns</sup>	2.30±0.53 <sup>cd</sup>	86.89±1.14 <sup>abcde</sup>	1.86±0.50 <sup>cde</sup>	7.03±1.40 <sup>abc</sup>
Phillips	6.04±0.09 <sup>bcd</sup>	4.18±0.11 <sup>ab</sup>	2.29±0.13 <sup>ns</sup>	2.47±0.53 <sup>abcd</sup>	85.36±1.13 <sup>cde</sup>	2.75±0.50 <sup>abcd</sup>	7.64±1.39 <sup>ab</sup>
Brantley	6.12±0.12 <sup>abcd</sup>	4.46±0.13 <sup>a</sup>	2.18±0.16 <sup>ns</sup>	2.89±0.67 <sup>abcd</sup>	86.81±1.43 <sup>abcde</sup>	3.45±0.63 <sup>ab</sup>	5.13±1.75 <sup>abc</sup>
NC 7	5.98±0.04 <sup>cd</sup>	4.10±0.05 <sup>bcd</sup>	2.21±0.06 <sup>ns</sup>	2.86±0.26 <sup>bcd</sup>	84.51±0.56 <sup>e</sup>	3.71±0.24 <sup>a</sup>	6.61±0.68 <sup>abc</sup>
NC 9	6.30±0.05 <sup>a</sup>	4.05±0.05 <sup>bcd</sup>	2.12±0.07 <sup>ns</sup>	2.61±0.26 <sup>bcd</sup>	86.41±0.57 <sup>cde</sup>	2.00±0.25 <sup>de</sup>	7.02±0.70 <sup>abc</sup>
NC 10C	6.03±0.04 <sup>cd</sup>	3.94±0.05 <sup>cef</sup>	2.18±0.06 <sup>ns</sup>	2.69±0.23 <sup>bcd</sup>	88.56±0.48 <sup>ab</sup>	1.87±0.21 <sup>de</sup>	4.57±0.60 <sup>c</sup>
NC-V 11	6.15±0.04 <sup>b</sup>	3.89±0.04 <sup>ef</sup>	2.19±0.05 <sup>ns</sup>	2.61±0.22 <sup>cd</sup>	89.15±0.46 <sup>a</sup>	1.64±0.20 <sup>e</sup>	4.70±0.57 <sup>bc</sup>
NC 12C	6.00±0.05 <sup>cd</sup>	4.02±0.06 <sup>bode</sup>	2.27±0.07 <sup>ns</sup>	2.58±0.30 <sup>cd</sup>	87.04±0.64 <sup>bcd</sup>	2.65±0.28 <sup>bcd</sup>	5.29±0.79 <sup>bc</sup>
Gregory	6.10±0.06 <sup>bcd</sup>	4.08±0.06 <sup>bcd</sup>	2.17±0.08 <sup>ns</sup>	1.85±0.32 <sup>d</sup>	88.90±0.68 <sup>ab</sup>	2.22±0.30 <sup>bode</sup>	5.25±0.84 <sup>bc</sup>
Perry	5.90±0.07 <sup>d</sup>	4.03±0.08 <sup>bode</sup>	2.29±0.09 <sup>ns</sup>	2.96±0.38 <sup>abc</sup>	88.95±0.82 <sup>ab</sup>	1.42±0.36 <sup>e</sup>	4.27±1.00 <sup>c</sup>
VA-C 92R	6.07±0.04 <sup>bcd</sup>	3.89±0.04 <sup>ef</sup>	2.09±0.05 <sup>ns</sup>	3.56±0.22 <sup>a</sup>	85.50±0.47 <sup>de</sup>	2.77±0.21 <sup>bc</sup>	6.28±0.58 <sup>abc</sup>
VA 98R	5.98±0.07 <sup>cd</sup>	3.82±0.08 <sup>f</sup>	2.28±0.09 <sup>ns</sup>	2.10±0.38 <sup>cd</sup>	88.85±0.82 <sup>ab</sup>	1.44±0.36 <sup>e</sup>	8.35±1.01 <sup>a</sup>
Wilson	6.02±0.07 <sup>bcd</sup>	3.90±0.09 <sup>def</sup>	2.28±0.10 <sup>ns</sup>	3.56±0.42 <sup>ab</sup>	88.06±0.91 <sup>abc</sup>	1.31±0.40 <sup>e</sup>	5.05±1.12 <sup>bc</sup>

a,b,c,d,e,f,g,h Means within a column followed by the same letter are not significantly different ( $P<0.05$ ) by t-test.

ns No significant differences among means line effects by F-test ( $P>0.05$ ).

**Table 5. Blanching characteristics of medium kernels.**

Line	Moisture content before roasting	Moisture content after roasting	Blanching loss	Blanched			
				Splits %	Whole kernels	Not blanched	Partially blanched
N98002	6.18±0.09 <sup>abc</sup>	3.84±0.09 <sup>cd</sup>	1.96±0.20 <sup>b</sup>	4.12±0.74 <sup>abc</sup>	66.92±2.28 <sup>e</sup>	15.20±1.63 <sup>a</sup>	11.91±1.35 <sup>a</sup>
Phillips	6.27±0.09 <sup>abc</sup>	4.12±0.09 <sup>a</sup>	2.17±0.19 <sup>ab</sup>	3.86±0.73 <sup>bc</sup>	71.74±2.27 <sup>de</sup>	11.08±1.61 <sup>ab</sup>	11.30±1.34 <sup>ab</sup>
Brantley	6.14±0.11 <sup>abc</sup>	4.17±0.11 <sup>a</sup>	2.19±0.25 <sup>ab</sup>	2.81±0.92 <sup>c</sup>	68.73±2.86 <sup>de</sup>	15.75±2.04 <sup>a</sup>	10.69±1.69 <sup>abc</sup>
NC 7	6.25±0.04 <sup>abc</sup>	4.16±0.04 <sup>a</sup>	2.19±0.10 <sup>ab</sup>	3.88±0.36 <sup>bc</sup>	68.74±1.11 <sup>e</sup>	13.43±0.79 <sup>a</sup>	11.90±0.66 <sup>a</sup>
NC 9	6.33±0.04 <sup>a</sup>	4.16±0.04 <sup>a</sup>	2.39±0.10 <sup>ab</sup>	3.81±0.37 <sup>bo</sup>	77.65±1.14 <sup>bo</sup>	5.35±0.81 <sup>d</sup>	10.93±0.67 <sup>ab</sup>
NC 10C	6.17±0.04 <sup>c</sup>	3.97±0.04 <sup>abcd</sup>	2.34±0.08 <sup>ab</sup>	5.48±0.31 <sup>u</sup>	81.16±0.97 <sup>u</sup>	4.37±0.69 <sup>d</sup>	6.79±0.57 <sup>d</sup>
NC-V 11	6.29±0.04 <sup>ab</sup>	4.01±0.04 <sup>abc</sup>	2.40±0.08 <sup>a</sup>	4.12±0.30 <sup>bc</sup>	81.60±0.93 <sup>a</sup>	4.86±0.66 <sup>d</sup>	7.17±0.55 <sup>d</sup>
NC 12C	6.17±0.05 <sup>bc</sup>	4.04±0.05 <sup>ab</sup>	2.20±0.11 <sup>ab</sup>	3.39±0.42 <sup>c</sup>	73.13±1.29 <sup>d</sup>	10.82±0.92 <sup>b</sup>	10.62±0.76 <sup>abc</sup>
Gregory	6.23±0.05 <sup>abc</sup>	4.06±0.05 <sup>ab</sup>	2.38±0.12 <sup>ab</sup>	3.78±0.44 <sup>bc</sup>	73.42±1.37 <sup>cd</sup>	9.58±0.98 <sup>b</sup>	11.01±0.81 <sup>ab</sup>
Perry	6.14±0.06 <sup>c</sup>	4.07±0.06 <sup>a</sup>	2.42±0.14 <sup>a</sup>	4.97±0.53 <sup>ab</sup>	78.87±1.63 <sup>ab</sup>	5.82±1.16 <sup>d</sup>	8.06±0.97 <sup>cd</sup>
VA-C 92R	6.20±0.04 <sup>bc</sup>	3.99±0.04 <sup>abc</sup>	2.30±0.08 <sup>ab</sup>	4.34±0.30 <sup>bc</sup>	73.38±0.94 <sup>d</sup>	9.23±0.67 <sup>bc</sup>	10.89±0.56 <sup>ab</sup>
VA 98R	6.20±0.06 <sup>abc</sup>	3.84±0.06 <sup>d</sup>	2.20±0.14 <sup>ab</sup>	4.57±0.53 <sup>abc</sup>	82.30±1.64 <sup>a</sup>	4.32±1.17 <sup>d</sup>	6.76±0.97 <sup>d</sup>
Wilson	6.16±0.07 <sup>abc</sup>	3.89±0.07 <sup>bcd</sup>	2.17±0.16 <sup>ab</sup>	5.03±0.59 <sup>ab</sup>	77.71±1.82 <sup>abc</sup>	6.48±1.30 <sup>cd</sup>	8.75±1.08 <sup>bcd</sup>

a,b,c,d,e Means within a column followed by the same letter are not significantly different ( $P<0.05$ ) by t-test.

**Table 6. Sensory data collected by the USDA-ARS Market Quality and Handling Research Unit, Raleigh, NC, from samples collected from the Virginia-Carolina peanut production area.**

Line	Roasted peanut <sup>§†</sup>	Sweet	Bitter	Astringent
<i>flavor intensity units (fiu) on a 1 to 14 scale</i>				
Phillips	3.35±0.24 <sup>bc</sup>	3.36±0.27 <sup>ab</sup>	2.37±0.19 <sup>ab</sup>	2.68±0.18 <sup>b</sup>
Brantley	3.35±0.13 <sup>c</sup>	3.02±0.14 <sup>b</sup>	2.68±0.10 <sup>a</sup>	3.18±0.10 <sup>a</sup>
NC 7	3.52±0.12 <sup>bc</sup>	2.74±0.12 <sup>b</sup>	2.68±0.09 <sup>a</sup>	2.99±0.08 <sup>ab</sup>
Gregory	4.19±0.28 <sup>a</sup>	2.60±0.29 <sup>b</sup>	2.47±0.20 <sup>ab</sup>	2.93±0.20 <sup>ab</sup>
Florunner	3.80±0.11 <sup>ab</sup>	2.75±0.12 <sup>ab</sup>	2.66±0.08 <sup>u</sup>	3.17±0.08 <sup>u</sup>
Georgia Green	3.81±0.13 <sup>ab</sup>	3.41±0.14 <sup>a</sup>	2.34±0.10 <sup>b</sup>	3.12±0.10 <sup>ab</sup>

a,b,c Means in the same column followed by the same letter are not significantly different ( $P<0.05$ ) by t-test.

**Table 7. Sensory data collected by the USDA-ARS Market Quality and Handling Research Unit, Raleigh, NC, from samples collected from the 2003 Uniform Peanut Performance Test at nine locations.**

Line	Roasted peanut <sup>§†</sup>	Sweet	Sweet aromatic	Bitter	Astrin- gent	Dark roast	Raw beany	Woody	Card- board	Fruity <sup>‡</sup>
Phillips	4.56 <sup>ab</sup>	2.08 <sup>b</sup>	2.95 <sup>b</sup>	3.06 <sup>a</sup>	1.12 <sup>ns</sup>	2.99 <sup>ns</sup>	2.25 <sup>ns</sup>	3.11 <sup>a</sup>	1.40 <sup>ab</sup>	1.19 <sup>ab</sup>
Brantley	4.38 <sup>b</sup>	2.01 <sup>b</sup>	2.84 <sup>b</sup>	3.10 <sup>a</sup>	1.10 <sup>ns</sup>	2.76 <sup>ns</sup>	2.39 <sup>ns</sup>	3.13 <sup>a</sup>	1.65 <sup>a</sup>	1.49 <sup>ab</sup>
NC 7	4.58 <sup>ab</sup>	2.03 <sup>b</sup>	2.84 <sup>b</sup>	3.03 <sup>ab</sup>	1.05 <sup>ns</sup>	2.70 <sup>ns</sup>	2.36 <sup>ns</sup>	3.13 <sup>a</sup>	1.40 <sup>a</sup>	1.04 <sup>b</sup>
Florunner	4.78 <sup>a</sup>	2.29 <sup>a</sup>	3.09 <sup>a</sup>	2.91 <sup>b</sup>	1.07 <sup>ns</sup>	2.91 <sup>ns</sup>	2.21 <sup>ns</sup>	3.04 <sup>b</sup>	1.13 <sup>b</sup>	1.62 <sup>a</sup>

† Graded samples from Suffolk, VA; Lewiston, NC; Tifton, GA; Headland, AL; Marianna, FL; Stephenville, TX; Denver City, TX; Pearsall, TX; and Fort Cobb, OK tasted.

‡ Graded samples from Lewiston, NC; Headland, AL; Stephenville, TX; Pearsall, TX; and Fort Cobb, OK tasted.

a,b Means in the same column followed by the same letter are not significantly different ( $P<0.05$ ) by t-test.

Table 8. Fatty acid composition, iodine values, oleic-linoleic ratios, polyunsaturated-saturated ratios, and calcium content of seeds grown in the Peanut variety and Quality Evaluation. Adjusted means from analysis of all data on the indicated lines collected since 1986.

Line	Fatty acid contents								% of total fatty acids	Iodine value <sup>†</sup>	Oleic-to linoleic ratio	Total saturates <sup>‡</sup>	Poly-unsaturate-to-saturate ratio <sup>§</sup>	Long-chain saturates <sup>¶</sup>	Calcium content
	Palmitic (16:0)	Stearic (18:0)	Oleic (18:1)	Linoleic (18:2)	Arachidic (20:0)	Eicosenoic (20:1)	Behenic (22:0)	Lignoceric (24:0)							
NN8002	9.73±0.07 <sup>cd</sup>	2.52±0.06 <sup>g</sup>	48.21±0.32 <sup>fg</sup>	32.37±0.30 <sup>b</sup>	1.31±0.02 <sup>fg</sup>	1.35±0.03 <sup>a</sup>	2.97±0.05 <sup>a</sup>	1.54±0.03 <sup>a</sup>	98.59±0.27 <sup>bc</sup>	1.40±0.28 <sup>cd</sup>	18.07±0.10 <sup>bc</sup>	1.80±0.02 <sup>bc</sup>	5.82±0.09 <sup>ab</sup>	649±31 <sup>de</sup>	
Phillips	9.67±0.07 <sup>cd</sup>	2.48±0.06 <sup>g</sup>	48.80±0.30 <sup>f</sup>	32.03±0.28 <sup>bc</sup>	1.29±0.02 <sup>g</sup>	1.32±0.03 <sup>a</sup>	2.94±0.05 <sup>ab</sup>	1.49±0.03 <sup>a</sup>	98.48±0.26 <sup>bc</sup>	1.58±0.27 <sup>cd</sup>	17.86±0.09 <sup>cd</sup>	1.79±0.02 <sup>bc</sup>	5.72±0.08 <sup>abc</sup>	672±31 <sup>de</sup>	
Brantley	5.73±0.09 <sup>g</sup>	4.15±0.08 <sup>a</sup>	79.14±0.39 <sup>a</sup>	4.37±0.36 <sup>i</sup>	1.69±0.03 <sup>a</sup>	1.35±0.03 <sup>a</sup>	2.49±0.06 <sup>f</sup>	1.10±0.04 <sup>f</sup>	76.68±0.33 <sup>i</sup>	21.75±0.34 <sup>a</sup>	15.16±0.11 <sup>g</sup>	0.29±0.02 <sup>h</sup>	5.28±0.10 <sup>de</sup>	667±39 <sup>de</sup>	
NC 7	8.76±0.04 <sup>f</sup>	3.67±0.03 <sup>b</sup>	55.89±0.16 <sup>b</sup>	25.11±0.15 <sup>h</sup>	1.63±0.01 <sup>b</sup>	1.05±0.01 <sup>c</sup>	2.77±0.03 <sup>cd</sup>	1.15±0.02 <sup>f</sup>	92.36±0.13 <sup>h</sup>	2.30±0.14 <sup>b</sup>	17.99±0.05 <sup>bc</sup>	1.40±0.01 <sup>g</sup>	5.56±0.04 <sup>c</sup>	658±17 <sup>de</sup>	
NC 9	10.13±0.06 <sup>b</sup>	2.71±0.05 <sup>f</sup>	47.07±0.24 <sup>h</sup>	33.31±0.22 <sup>a</sup>	1.33±0.02 <sup>fg</sup>	1.22±0.02 <sup>b</sup>	2.82±0.04 <sup>cd</sup>	1.51±0.03 <sup>a</sup>	99.06±0.20 <sup>ab</sup>	1.41±0.21 <sup>cd</sup>	18.49±0.07 <sup>c</sup>	1.81±0.01 <sup>bc</sup>	5.66±0.06 <sup>bc</sup>	565±35 <sup>ef</sup>	
NC 10C	9.77±0.04 <sup>c</sup>	3.16±0.03 <sup>c</sup>	48.80±0.16 <sup>f</sup>	31.68±0.15 <sup>c</sup>	1.48±0.01 <sup>cd</sup>	1.04±0.01 <sup>c</sup>	2.77±0.03 <sup>cd</sup>	1.30±0.02 <sup>d</sup>	97.65±0.14 <sup>d</sup>	1.54±0.14 <sup>cd</sup>	18.49±0.05 <sup>c</sup>	1.72±0.01 <sup>d</sup>	5.55±0.04 <sup>c</sup>	653±18 <sup>de</sup>	
NC-V 11	10.36±0.04 <sup>a</sup>	2.39±0.03 <sup>g</sup>	47.60±0.17 <sup>gh</sup>	33.13±0.16 <sup>a</sup>	1.19±0.01 <sup>h</sup>	1.23±0.01 <sup>b</sup>	2.58±0.03 <sup>f</sup>	1.49±0.02 <sup>a</sup>	99.32±0.14 <sup>a</sup>	1.40±0.15 <sup>d</sup>	18.02±0.05 <sup>bc</sup>	1.85±0.01 <sup>a</sup>	5.26±0.04 <sup>de</sup>	647±20 <sup>de</sup>	
NC 12C	9.65±0.05 <sup>cd</sup>	3.07±0.04 <sup>cd</sup>	51.61±0.20 <sup>d</sup>	29.27±0.19 <sup>e</sup>	1.46±0.01 <sup>de</sup>	1.05±0.02 <sup>c</sup>	2.67±0.03 <sup>e</sup>	1.22±0.02 <sup>e</sup>	95.90±0.17 <sup>f</sup>	1.80±0.18 <sup>cd</sup>	18.08±0.06 <sup>b</sup>	1.62±0.01 <sup>e</sup>	5.36±0.05 <sup>d</sup>	576±20 <sup>f</sup>	
Gregory	8.94±0.05 <sup>e</sup>	2.95±0.05 <sup>e</sup>	52.94±0.23 <sup>c</sup>	28.36±0.21 <sup>f</sup>	1.43±0.02 <sup>e</sup>	1.25±0.02 <sup>b</sup>	2.74±0.04 <sup>de</sup>	1.41±0.02 <sup>bc</sup>	95.63±0.19 <sup>f</sup>	1.82±0.20 <sup>bcd</sup>	17.46±0.07 <sup>c</sup>	1.63±0.01 <sup>e</sup>	5.58±0.06 <sup>c</sup>	638±23 <sup>de</sup>	
Perry	9.72±0.05 <sup>cd</sup>	2.62±0.05 <sup>f</sup>	48.72±0.24 <sup>f</sup>	32.04±0.22 <sup>bc</sup>	1.36±0.02 <sup>f</sup>	1.23±0.02 <sup>b</sup>	2.85±0.04 <sup>abc</sup>	1.48±0.02 <sup>a</sup>	98.36±0.20 <sup>c</sup>	1.46±0.21 <sup>cd</sup>	18.02±0.07 <sup>bc</sup>	1.78±0.01 <sup>c</sup>	5.69±0.06 <sup>bc</sup>	682±23 <sup>bc</sup>	
VVA-C 92R	9.60±0.04 <sup>d</sup>	3.06±0.03 <sup>d</sup>	49.97±0.16 <sup>c</sup>	30.31±0.15 <sup>d</sup>	1.51±0.01 <sup>c</sup>	1.20±0.01 <sup>b</sup>	2.96±0.03 <sup>a</sup>	1.41±0.02 <sup>bc</sup>	96.41±0.14 <sup>e</sup>	1.66±0.14 <sup>cd</sup>	18.54±0.05 <sup>c</sup>	1.64±0.01 <sup>e</sup>	5.87±0.04 <sup>a</sup>	868±18 <sup>a</sup>	
VVA 98R	10.15±0.05 <sup>b</sup>	2.45±0.05 <sup>g</sup>	48.54±0.24 <sup>f</sup>	32.48±0.22 <sup>b</sup>	1.20±0.02 <sup>h</sup>	1.21±0.02 <sup>b</sup>	2.53±0.04 <sup>f</sup>	1.47±0.03 <sup>ab</sup>	98.95±0.20 <sup>ab</sup>	1.42±0.21 <sup>cd</sup>	17.78±0.07 <sup>de</sup>	1.83±0.01 <sup>ab</sup>	5.19±0.06 <sup>c</sup>	617±23 <sup>def</sup>	
Wilson	8.80±0.06 <sup>cd</sup>	3.12±0.05 <sup>cd</sup>	53.49±0.26 <sup>c</sup>	27.68±0.24 <sup>g</sup>	1.48±0.02 <sup>cd</sup>	1.23±0.02 <sup>b</sup>	2.82±0.04 <sup>cd</sup>	1.39±0.03 <sup>c</sup>	94.91±0.22 <sup>g</sup>	2.01±0.23 <sup>bc</sup>	17.61±0.08 <sup>ef</sup>	1.58±0.02 <sup>f</sup>	5.70±0.07 <sup>bc</sup>	745±26 <sup>b</sup>	

a,b,c,d,e,f,g,h Means within a column followed by the same letter are not significantly different ( $P < 0.05$ ) by t-test.

ns No significant differences among means line effects by F-test ( $P > 0.05$ ).

† Weighted sum of oleic, linoleic, and eicosenoic acid contents [0.8601(18:1)+1.7321(18:2)+0.7854(20:1)]

‡ Sum of palmitic, stearic, arachidic, behenic, and lignoceric acid contents.

§ Ratio of linoleic acid content to total saturated fatty acid content.

¶ Sum of arachidic, behenic, and lignoceric acid contents.

U.S. DEPARTMENT OF AGRICULTURE  
AGRICULTURAL MARKETING SERVICE

Application is required in order to determine if a plant variety protection certificate is to be issued (7 U.S.C. 2421). The information is held confidential until the certificate is issued (7 U.S.C. 2426).

**EXHIBIT E**  
**STATEMENT OF THE BASIS OF OWNERSHIP**

1. NAME OF APPLICANT(S) <b>North Carolina State University</b>  <b>U.S. Government as represented by the Secretary of Agriculture</b>	2. TEMPORARY DESIGNATION OR EXPERIMENTAL NUMBER <b>N98003</b>	3. VARIETY NAME <b>Phillips</b>
4. ADDRESS (Street and No., or R.F.D. No., City, State, and ZIP, and Country) <b>Office of Technology Transfer, Box 8210 N.C. State University, Raleigh, NC 27695-8210 USA</b>	5. TELEPHONE (Include area code) <b>(919) 515-7199</b>	6. FAX (Include area code) <b>(919) 515-3773</b>
7. PVPO NUMBER <b>200600070</b>		

8. Does the applicant own all rights to the variety? Mark an "X" in the appropriate block. If no, please explain.

☒ YES ☐ NO

9. Is the applicant (individual or company) a U.S. national or a U.S. based company? If no, give name of country.

☒ YES ☐ NO10. Is the applicant the original owner? ☒ YES ☐ NO If no, please answer one of the following:

a. If the original rights to variety were owned by individual(s), is (are) the original owner(s) a U.S. National(s)?

☐ YES ☐ NO If no, give name of country

b. If the original rights to variety were owned by a company(ies), is (are) the original owner(s) a U.S. based company?

☐ YES ☐ NO If no, give name of country

11. Additional explanation on ownership (Trace ownership from original breeder to current owner. Use the reverse for extra space if needed):

**This variety was jointly developed and is co-owned by North Carolina State University and the U.S. Government as represented by the U.S. Secretary of Agriculture.****PLEASE NOTE:**

Plant variety protection can only be afforded to the owners (not licensees) who meet the following criteria:

1. If the rights to the variety are owned by the original breeder, that person must be a U.S. national, national of a UPOV member country, or national of a country which affords similar protection to nationals of the U.S. for the same genus and species.
2. If the rights to the variety are owned by the company which employed the original breeder(s), the company must be U.S. based, owned by nationals of a UPOV member country, or owned by nationals of a country which affords similar protection to nationals of the U.S. for the same genus and species.
3. If the applicant is an owner who is not the original owner, both the original owner and the applicant must meet one of the above criteria.

The original breeder/owner may be the individual or company who directed the final breeding. See Section 41(a)(2) of the Plant Variety Protection Act for definitions.

According to the Paperwork Reduction Act of 1995, an agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. The valid OMB control number for this information collection is 0581-0055. The time required to complete this information collection is estimated to average 0.1 hour per response, including the time for reviewing the instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information.

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